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AUTHOR Hartley, Nancy K.: And Others
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ABSTRACT

A project was conducted to develop materials that could be utilized by teachers for informal assessment of the needs of students in vocational programs. Sixteen modules were developed to help teachers identify some of the areas in which students have special learning needs, clarify various levels of abilities, and distinguish the different learning styles of students. The sixteen modules cover the following vocational areas: welding, sheet metal, agriculture, graphic arts, woodworking, automotive, autobody, drafting, health occupations, world of work, food preparation, child care, distributive education, electricity, horticulture, and business and office occupations. The materials in the modules allow for informal assessment in three basic areas: academic skills, motor skills, and vocational interests and awareness. (LRA)

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# DESIGN AND IMPLEMENTATION OF AN ASSESSMENT MODEL FOR STUDENTS ENTERING VOCATIONAL EDUCATION PROGRAMS IN THE STATE OF COLORADO

Final Report - August, 1979

University of Northern Colorado
Vocational Teacher Education

Connie Cline
Nancy Hartley
Karen Otazo

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## ABSTRACT

### DESIGN AND IMPLEMENTATION OF AN ASSESSMENT MODEL FOR STUDENTS ENTERING VOCATIONAL EDUCATION PROGRAMS IN THE STATE OF COLORADO

Each learner should be considered as unique
All students have unique characteristics which are
considered by alert teachers in their efforts
to foster more effective learning. This is
especially true in vocational programs where our
opportunities to know each learner are greater
than in some other classroom situations.

Douglas Towne
Sydney Wallace

The purpose of this project was to develop materials that could be utilized by teachers for informal assessment of the needs of students in vocational programs. The review of literature has shown that vocational education needs to continue to work towards providing training "appropriate to the needs and progress of each ... individual." Assessment is an area that continually needs to be explored and developed if the maximum potential of disadvantaged and handicapped students are to be realized in regular vocational programs. Vocational programs can be modified in a variety of ways but cannot be done effectively until assessment of student needs has been completed. The project, therefore, focused on the development of 16 modules through which teachers could do basic, informal assessment of the individual needs of students in the various vocational programs. The materials can help teachers identify some of the areas in which students have special learning needs, clarify various levels of abilities and distinguish the different learning style of students. The information obtained through the assessment materials in the 16 modules can be used in a variety of ways including the following:

- grouping of students with similar instructional needs
- placement of students in programs
- modification of instructional materials

- writing goals and objectives for the student
- obtaining remedial help
- as a model to devise your own materials
- writing contracts for behavioral change
- giving specific information to supplemental services or staff for assisstance
- as data for developing individualized education plans for handicapped students

The 16 modules cover the following vocational areas:

1) Welding
2) Sheet Metal
3) Agriculture
4) Graphic Arts
5) Woodworking
6) Automotive
7) Autobody
8) Drafting
9) Health Occupations
10) World of Work
11) Food Preparation
12) Child Care
13) Distributive Education
14) Electricity
15) Horticulture
16) Business & Office Occupations

The materials in the modules allow for informal assessment in three basic areas; academic skills, motor skills, and vocational interest and awareness. The basic skills assessment includes Reading Skills, Listening Skills, Using a book to Locate Information and Mathematics.

The reading section offers materials written at two different reading levels; the first paragraph being easy (4-8), the second paragraph more difficult (9-12). The motor skills are assessed through teacher observation and recording on a matrices skills checklist. The third area, vocational interest and awareness, is assessed through a vocational awareness questionnaire completed by students. In addition to the above materials, the World of Work module has two more areas, "Following Directions" and "Safety Warnings Quiz." The entire World of Work module was written specifically for students in disadvantaged and handicapped programs.

The purpose of these informal tests and checklists are to:

1) determine which students can comprehend information at reading levels comparable to the reading levels typically found in their class texts.

2) determine the student abilities to do typical types of vocational math problems.

3) determine whether a student can locate information in books.

4) gather the information necessary to make daily instructional decisions.

5) observe motor abilities of students and relate them to vocational program goals.

Materials are color coded for ease of usage and efficiency.

| | | |
|---|---|---|
| White | - | Introduction and Vocational Awareness Questionnaire |
| Yellow | - | Student Sheets |
| Green | - | Teacher Materials |
| Salmon | - | Matrices |
| Gold | - | Class Scoring Sheets |

Flexibility has been a key factor in the materials development so that the modules can be utilized in a number of diverse settings and be practical enough for teachers to use in the classroom. The materials are for use at the secondary and post secondary levels.

Individual activities within modules can be completed within a class period. Teachers can choose to use all or part of the modules and in any order she or he likes.

The materials were field tested in Colorado in the Spring of 1979. The field testing consisted of a 4-part approach: Initial Review, Reworking, Classroom Use and Workshop Review. At each of the four testing stages the materials were reviewed and/or used by vocational and special needs educators including:

a. trainers for the Vocational Reading Power Project.
b. secondary remedial reading and special needs practitioners.
c. secondary support services personnel.
d. pre-service teachers in training.
e. practicing teachers.
f. teachers wishing to be recredentailed.
g. students from vocational education and special education.

The modules were dissiminated to Colorado educators through inservice work-

shops in the Summer of 1979 and through the mailing of a sample module to vocational directors and special education directors in all vocational-technical centers throughout Colorado.

The modules and a final report on the project are available on a cost recovery basis from:

Vocational Teacher Education
University of Northern Colorado
Greeley, Colorado 80639

The cost of each module is $2.75.

The cost of each final report is $2.00

For further information regarding the project, contact Dr. Nancy Hartley at 303/351-2939.

The use of assessment in program planning, design, and implementation is a basis component in creating a learning environment that is conducive to student success and achievement. Assessment is the key to making vocational programs more accountable for meeting the needs of students with learning problems. These assessment modules have been developed to aid vocational and special educators in being more responsive to student needs and thereby increasing the students success and level of achievement within the program.

## REVIEW OF LITERATURE

There appears to be a vast number of individuals whose needs have not been met by the array of programs and services provided in regular vocational education programs. Assessment of the needs of these individuals is vital to ascertain the needs of those who have been unserved or underserved in the past and to address them in a manner which will enable them to succeed in vocational programs and allow them to become contributing members of society.

There are, essentially, three pieces of legislation which mandate service to special populations. Public Law 94-482, the Education Amendments of 1976; Public Law 94-142, The Education for All Handicapped Children Act; and the Amendments to the Rehabilitation Act of 1973, Public Law 93-112. Additionally, there are other pieces of legislation which insure the civil rights of all citizens.

Each of the three acts have specific implications and stipulations regarding handicapped and disadvantaged populations within vocational education programs. P.L. 94-482 provides the following definitions of disadvantaged and handicapped:[1]

> Disadvantaged means ... persons who have academic or economic disadvantages and who require special services, assistance or programs in order to enable them to succeed in vocational education programs. (Section 197.16).
>
> The term handicapped ... means persons who are mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, serious emotionally disturbed, orthopedially impaired, health impaired or persons with specific disadvantages who by reason thereof require special education and related services, and who because of their handicapping conditions cannot succeed in their regular vocational education without special education assisstance or who require a modified vocational education program. (Section 197.7).

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[1]Education Amendments. Page 143.

The following sections of these regulations apply to the assessment of disadvantaged and handicapped students.[2]

P.L. 94-482 (section 104,203) states that there must be specific provisions for the measurement of student functioning and achievement.

a. Provisions must be made for administering standard proficiency measures and criterion referenced tests in both visual and auditory modes, as well as in native languages.

b. Nondiscriminatory measures of affect are not readily available and will be developed. Inservice training, guideline, and resource materials should be provided by state departments to assist vocational educators with assessing achievement of special students.

Public Law 94-142 (The Education of All Handicapped Children Act, Section 121a).

a. Tests and other evaluation materials are provided and administered in the child's native language or other mode of communication.

b. Tests and other evaluation materials have been validated for the specific purpose for which they are used (also Section 504,84, of the Rehabilitation Amendments of 1973).

c. Tests and other evaluation materials include those tailored to assess specific areas - of education need and not merely those designed to provide a single general intelligence quotient (also Section 504,84).

d. The test results accurately reveal the child's aptitude or achievement level or whatever other factors the test purpose to measure, rather than reflecting the child's impared sensory, manual, or speaking skills. (also Section 504,84).

e. No single procedure is used as the sole criterion for determining an appropriate educational program for the child. The child is assessed in all areas related to the suspected disability, including where appropriate health, vision, hearing, and social and emotional status, general intelligence, acadmic performance, communicative status and motor abilities.

f. Draw upon information from a variety of sources, including aptitude test, teacher recommendation, physical condition, social or cultural background, and adaptive behavior. (also Section 504,84).

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[2]Phelps, Particpant Manual Assessment Institute, 1977. Pages 8-11.

What are the implications of these legislative provisions and regulations to the title of the project?

When disadvantaged and handicapped students are placed in vocational classes, the IEP staffing team, special education personnel and the teachers involved with the student should be involved in the selection, administration and interpretation of tests for that student. Non-discriminatory task specific tests and evaluation materials are needed to assess educational needs related to motor skills, vocational aptitudes, occupational interests and basic academic skills which would assist in designing appropriate vocational instruction.

Vocational and prevocational educators should develop and/or use tests or materials which will give them a picture of the student's capability to function in a vocational setting. To facilitate program and instructional planning and placement of a student in a vocational program, the results of the data collection should be compiled and used to plan the student's program or IEP (Individualized Educational Plan). The IEP should always address the career goals of a handicapped student. Specific criteria for modification of programs or supplemental help that is needed should also be identified.

There seems to be little doubt that <u>every</u> student in an educational system could benefit from assessment. If teachers know where each student is functioning then they can decide where they want to go with the student and in what period of time. Moreover, assessment data will provide information as to what methods and materials will facilitate the students ability to learn within their program.

This project was designed to supplement the testing involved in the IEP and aid the classroom teacher in meeting the needs of those students in the vocational classroom who need program and/or material modification to be successful.

The scope of review of the literature will focus on student assessment.

Generally the emphasis will be on the administration of appropriate diagnostic tests and the utilization of these results.

The review of literature identified only one project which addressed the need for informal assessment of special needs of the students. This 1975 study, Continuation of a Project to Develop a Vocational Classroom Teacher's "Hands-On" Instrument to Measure Entry and Exit of the Special Education Student for Specific Occupations, looked at Auto Mechanics and Food Service. The basic assumption of the study was that the vocational instructor was faced with the task of dealing with a hetrogeneous group of students in terms of academic or basic related skills and was expected to teach them all a vocational skill. "For this reason, the teacher needs to vary the curriculum presentation and his/her ability to do this depends on the availability of diagnostic information about the required prerequisite behaviors and how many of these behaviors a student exhibits."[3]

The study acknowledged that counselors and psychologists currently draw on a number of standardized tests for assessment, however, these are not specifically related to the tasks and contents of the vocational setting. The placement of students into vocational programs often did not include input from the vocational instructors. (Atkins, et al., 1977). Moreover, the testing did not indicate appropriate information about the current functioning of the student in areas necessary for the student to survive in the vocational program.

There are vast differences among students who are disadvantaged and/or handicapped. These differences must be recognized when placing students in vocational programs. If instructional programs are to adjust curriculum, teaching methods or facilities to meet educational needs of students, it is productive to know what kinds of adjustments need to be made. Schwartz (1978) stated that

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[3]Atkins, Richard, Continuation of a Project. Page 14.

the basic goal of assessment is to clarify the individual needs of students.

Becoming aware of and addressing these needs is not any easy task for teachers. In 1978, an Iowa study found that the highest priority for inservice education from the teachers' point of view was diagnosis of individual student learning needs. The next most important area identified was individualizing instruction. Individualizing instruction should be preceded by the assessment of student skills. (Greenwood and Morley, 1978).

Some of the more popular and usable examples of assessment instruments will be included in the body of this report. Other recommended tests will be included in Apendix A. The assessment areas addressed in this report are; achievement, interest, aptitude, behavioral, motor skills and vocational evaluation.

## ACHIEVEMENT TESTING

Achievement tests are commonly used to assess the present level of functioning or acquired abilities of the student. They tend to measure previously learned information and are usually paper and pencil in nature. Achievement testing should always be done prior to other types of testing so as to assess the students ability to comprehend other batteries. An example of this would be that a student who is assessed at the first grade reading level on an achievement test should not be asked to take the Kuder Occupational Interest Test which is written at the sixth grade level. Many special needs students have poor academic abilities which may have an effect on the vocational programs and/or job setting placement. Some commonly used achievement tests are discussed below:

Test of Adult Basic Education (TABE)

This test is used to test the basic academic levels of adults. Tests cover reading, language and arithmetic.

Wide Range Achievement Test (WRAT)

This test was designed for individual usage with children ages 5 through adult. Test measures spelling, arithmetic and reading. The reading section assesses

the students phonie ability.

SRA Reading and Arithmetic Indexes

This test was designed to test reading and arithmetic skills of adolescents and adults.

Peabody Individual Achievement Test (PIAT)

This test was designed to provide a quick assessment of educational levels of students 5-12. The test is individual and can be used for screening purposes. The test is made up of 5 sub sections and a total score.

## INTEREST TESTING

Interest tests are important to utilize in vocational program placement so that the teacher knows what the students like to do. This should be combined with informal discussion of the results of the test and consensus from the student on their likes and dislikes as related to career. Career development theory indicates that a student's self concept is related to career choice (Super, 1975). This indicates that students must be made aware of their potentialities before they can be expressed in career choice. This is especially true of special needs students who often have poor self concepts and limited awareness of career options.

Reading-Free Vocational Interest Inventory

This inventory has eleven male cluster and eight female cluster scales covering the typical field thought to be appropriate for mentally retarded students. Like many interest inventories, this is a force/choice test. The student is presented with three pictures at a time and must choose the one most appealing. The number of times pictures are chosen in related areas determines the occupational interests indicated in the scoring. (Becker, 1972).

Minnesota Importance Questionnaire

There are twenty vocational needs measured by this instrument: ability utilization, achievement, activity, advancement, authority, company policies, compensation, coworkers, creativity, independence, moral values, recognition, responsibility, security, social service, social status, supervision, human relations, variety of working conditions and autonomy. This is a 210 item test requiring a fifth grade reading level. The results indicate what the student thinks is important in the ideal job. (Brolin, 1976).

Geist Picture Interest Inventory

Each test item consists of a choice among three items answering the questions "Which would you rather do for a living?" Interest in eleven different areas is indicated. There are fourty-four items and some of the words are difficult to read. It is normed for grades eight to twelve.

Wide Range Interest and Opinion Test

The Wide Range Interest test is an instrument which uses pictures, and does not require reading or language to understand. The activities represented are those listed in the Dictionary of Occupational Titles. The test is designed to indicate vocational and education interest. It is normed on seven age groups from kindergarten through adulthood for both males and females. (Jastak Assessment Associates, Inc.).

ASSESSMENT OF BEHAVIOR

Observation of behavior is the primary tool in "Situational Assessment." Situational Assessment is the "systematic procedure for observing, recording, and interpreting work behavior. One of the underlying assumptions of observation is that behavior is determined both by the person and the situation and any attempt to isolate one from the other, or neglect the context, results in loss

of data or in misinterpretation."[4]

Observing students in the shop or on the job gives a better idea of the students vocational capabilities. Observation is often the best avenue for assessing certain types of behavior related to work. The context or situation is more like work than paper and pencil testing.

Skilled observation needs to include sensitivity, objectivity and practice. There also needs to be a component of common sense and general knowledge. Several factors should be kept in mind when observing.

1. The more natural the situation the more likely that the behavior will reflect characteristic behavior of the individual.
2. Any observation only reflects present functioning of the individual.
3. Physical factors may profoundly affect behavior.
4. Be sensitive to inconsistencies of behavior. A change in behavior may be a reaction to an outside event.
5. Beware of stereotyped ideas about handicapped and disadvantaged individuals.
6. More than one person may observe the student in a work-like situation.
7. Jot down a description of the exact situation that you observed.
8. Note day and time of observation.
9. When you have a question about a student, keep it in mind while observing.

(adapted from Pruitt, 1977)

APTITUDE TESTING

Aptitude tests are designed to measure a persons' capability to learn. There are two types of aptitude tests generally used. Those tests that are designed to measure specific ability areas, ie., clerical, manual dexterity and those that are designed to measure multiple aptitudes, ie., clerical and manual,

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[4]Pruitt, 1977. Page 167.

motor and finger dexterity. Parker and Hansen (1976) note that aptitude tests tend to measure innate aspects of ability.

General Aptitude Test Battery (GATB)

The GATB was developed by the U.S. Department of Labor through the process of job analysis and task analysis. Nine of the most significant work aptitudes are measured. Tests cover spatial perception, form perception, clerical perception, motor coordination, finger dexterity and manual dexterity. The Battery is designed for individuals 16 or over.

Differential Aptitude Tests (DAT)

This test is designed to give an indepth view of various aptitude of an individual. Test measures verbal reasoning, numerical ability, abstract reasoning, clerical speed and accuracy, mechanical reasoning, space relations, spelling and grammar. It is designed for grades 8-12 and adults.

Social and Prevocational Information Battery

The nine tests in this battery were originally constructed for use with educatable mentally retarded individuals. There is also a form "T" which is desgined for trainable mentally retarded persons. The form "T" has a pre-test to give the student practice in the yes-no response format. This is then utilized for screening to determine if the student will take the rest of the test. The test covers: personal grooming and daily functioning, job seeking and keeping skills, money related skills and home management.

MOTOR SKILLS

Many special needs students are placed in vocational programs or on jobs based on their scores from various standardized achievement tests, but are not assessed as to their ability to do the motor skills demanded in that vocational setting. The assessment of motor skills is often critical for the success of the "special needs" student in a vocational program.

BENNET HAND TOOL DEXTERITY TEST

The test is designed to use ordinary mechanic's tools and a wooden structure to see how well students can manipulate objects. The student is asked to transfer bolts, washers and nuts with wrenches and a screw driver from one side of the structure to the other. The instructions are complicated, therefore, there may be a problem with the student understanding and remembering the directions. This is a timed test.

PURDUE PEGBOARD

This test is designed to measure finger dexterity and gross motor movement of hands, fingers and arms. There are separate measurements for right and left hands and both hands together. There is no reading required in this test.

CRAWFORD SMALL PARTS DEXTERITY TEST

This test is designed to measure eye-hand coordination. The individual taking the test is asked to manipulate objects onto a board. There is no reading required to take this test.

Vocational Evaluation

The use of vocational evaluation data can be especially helpful for those students who do poorly on paper and pencil tests. Many special needs students have poor academic abilities and cannot read at the level required to comprehend paper and pencil tests. The Tenth IRS (1972) Study Group defined vocational evaluation as follows:

> Vocational (work) evaluation is a comprehensive process that utilizes work, real or simulated, as the focal point for assessment and vocational counseling to assist individuals in vocational development. Vocational (work) evaluation incorporates medical, psychological, social, vocational, educational, cultural and economic data to assist in the attainment of the goals of the evaluation process.[5]



[5]Pruitt, 1977. Page 3.

Vocational evaluation is designed to assess the areas where the students will have the greatest probability of vocational success. A variety of vocational evaluation systems have been developed to assess the vocational potential of clients.

Commercially developed vocational evaluation systems usually consist of a series of work samples. Work samples are a part or sample of a larger job. These are packaged to be portable, simulated or part of a real job in a work setting.

Some commerical systems use actual tasks to assess how an individual will succeed in a job which incorporates that task. An example of a task is reaching over your head to screw in nuts and bolts. This task may be found in a number of jobs like automotive repair, pipe fitting or plumbing.

A list and comparison of some of the most commonly used commercially available systems follows after a discussion of some typical questions that should be asked to evaluate the usability and applicability of commercial systems.

1) Does the system take into account academic limitations of the student?

2) Does the system take into account verbal limitations of the student being evaluated?

3) Does the system take into account the expectancy to fail? (Syndrome of many special needs students).

4) Does the system account for the student or client who has limited experience in the area being evaluated?

5) Does the system allow for more than one trail on a task?

6) Does the system allow for repeated instruction? i.e., Can learning take place or is it only previous knowledge being addressed?

7) Does the system have face validity?

8) Are the evaluations spaced over a period of time or done sequentially until completion?

9) Does the system have norms on the kind of population that you will be using it with during evaluation?

10) Does the system relate to the population that you will be using it with in your school?

A COMPARISON OF THE SEVEN VOCATIONAL EVALUATION SYSTEMS, Botterbusch (1976).[6]

| Outline | McCarron-Dial | JEVS | Singer | TAP | TOWER | VALPAR | WREST |
|---|---|---|---|---|---|---|---|
| 1. Development | | | | | | | |
| a. Sponsor | McCarron & Dial | U.S. Department of Labor | Singer Education Division | Talent Assessment Programs | Vocational Rehabilitation Administration | Valpar Corporation | Guidance Associates of Delaware, Inc. |
| b. Target Group | mentally retarded and mentally ill | disadvantaged | not specified | not specified | physically and emotionally disabled | industrially injured workers | not specified |
| c. Basis of System | 5 neuropsychological factors | DOT | not specified | occupational clusters | job analysis | trait and factor | not specified |
| 2. Organization | | | | | | | |
| a. Number of Work Samples | 17 | 28 | 20 | 11 | 93 | 12 | 10 |
| b. Grouping of Work Samples | grouped into 5 factors | 10 Worker Trait Groups | each work samples is independent | each work sample is independent | 14 training areas | each work sample is independent | each work sample is independent |
| c. Packaging of Work Sample | some individually packaged | all individually packaged | self-contained in carrel | all individually packaged | not individually packaged | all individually packaged | not individually packaged |
| d. Manual | offset; contains all details | offset; contains all details | printed; some details not provided | offset; some details not provided | printed; some details not provided | individual manual for each work sample; offset, contains all details | printed; contains all details |
| 3. Work Evaluation Process | | | | | | | |
| a. Preliminary Screening | client interview | not required | not required | not specified | emphasized for planning | not required | not specified |
| b. Sequence of Administration | in order by factors | progressive from easiest to hardest | discretion of evaluator | 8 of the work samples given in any order | progressive within areas | discretion of evaluator | in order by number |

[6] Pruitt, 1977. Pages 88-95

| Outline | McCarron-Dial | JEVS | Singer | TAP | TOWER | VALPAR | WREST |
|---|---|---|---|---|---|---|---|
| 3. c. Client involvement | encouraged | little client involvement | extensive client involvement | not specified | not specified | not specified | not specified |
| d. Evaluation Setting | formal testing and workshop | realistic work setting stressed | not specified | not specified | realistic work setting stressed | not specified | not specified |
| e. Time to Complete Entire System | 2 weeks | 6-7 days | estimate over 3 weeks | 2½ hours | 3 weeks | estimate 12-15 hours | 1½ hours |
| 4. Administration | | | | | | | |
| a. Procedures | specified in detail | specified in detail | general procedures described | not specified in detail | specified in detail, except layout | specified in detail | specified in detail; can be group administered |
| b. Method of Instruction Giving | oral and demonstration | most oral and demonstration | audio-visual | oral and demonstration | written instructions | oral and demonstration | oral and demonstration |
| c. Repeating Work Samples | factor 3 repeated if necessary | not recommended | repeated if desired by evaluator | not specified | encouraged for upgrading | encouraged for upgrading | emphasized for upgrading |
| d. Providing Assistance to Client | little assistance provided | assistance lowers score | checkpoints built in | little assistance | not specified | not specified | not specified |
| 5. Scoring and Norms | | | | | | | |
| a. Timing | evaluator times client | client uses time clock | evaluator times client | evaluator times client | evaluator times client | evaluator times client | evaluator times client |
| b. Timint Interval | few tasks are timed | from end of instructions to completion to task | varies with each work sample | from end of instructions to completion of task | from end of instructions to completion of task | from end of instructions to completion of task | usually from end of instructions to completion of task |
| c. Time Norms | no separate time norms | rated on 3-point scale | rated on 5-point scale | actual time recorded | rated on 5-point scale | actual time recorded | actual time recorded |

| Outline | McCarron-Dial | JEVS | Singer | TAP | TOWER | VALPAR | WREST |
|---|---|---|---|---|---|---|---|
| 4. d. Providing Assistance to Client | little assistance provided | assistance lowers score | checkpoints built in | little assistance | not specified | not specified | not specified |
| 5. Scoring and Norms | | | | | | | |
| a. Timing | evaluator times client | client uses time clock | evaluator times client | evaluator times client | evaluator times client | evaluator times client | evaluator times client |
| b. Timing Interval | few tasks are timed | from end of instructions to completion of task | varies with each work sample | from end of instructions to completion of task | from end of instructions to completion of task | from end of instructions to completion of task | usually from end of instruction to completion of task |
| c. Time Norms | no separate time norms | rated on 3-point scale | rated on 5-point scale | actual time recorded | rated on 5-point scale | actual time recorded | actual time recorded |
| d. Error Scoring | compared to standards | compared to standards | compared to standards | not clearly defined | compared to standards | compared to standards | compared to standards |
| e. Scoring Aids | not used | minimal use | some use | not used | extensive use | some use | not used |
| f. Quality Norms | combined with time norms for overall score | most rated on 3-point scale | rated on 5-point scale | combined with time norms for overall score | rated on 5-point scale | time and error combined for performance norms | all errors totaled for single quality score |
| g. Emphasis in Scoring | quality | time and quality given equal weight | quality | time | time and quality given equal weight | time and quality given equal weight | time |
| 6. Observation of of Client | | | | | | | |
| a. Work Performance | some factors identified | 25 factors specified | 29 factors defined | no factors defined | few factors specified | no factors defined | no factors defined |
| b. Work Behaviors | clearly defined | clearly defined | clearly defined | no behavior defined | not specifically defined | 17 factors defined | no behaviors defined |
| c. Rating System | 3 separate instruments used | 3-point rating scale | general rating on 5-point scale for each work sample | no rating method used | 5-point rating scale used | 5-point rating scale used | no rating method used |

| Outlire | McCarron-Dial | JEVS | Singer | TAP | TOWER | VALPAR | WREST |
|---|---|---|---|---|---|---|---|
| 6. d. Frequency of Observation | not specified | extensive observations | very frequent | not specified | not emphasized | not specified | not specified |
| 7. Reporting | | | | | | | |
| a. Forms | standardized forms for all phases | standardized forms for all phases | standardized forms for all phases | standardized forms for all phases | standardized forms for all phases | standardized forms for recording performance | standardized forms for recording performance |
| b. Final Report Formats | profile of results and recommendations | standardized format; recommended Work Trait Groups | narrative | profile of results and narrative report | narrative using standardized outline and ratings | not used; independent work samples | not specified |
| 8. Utility | | | | | | | |
| a. Vocational Exploration | little use to client | limited use | extensive occutional information given to client | limited use | exposure to a variety of work areas | limited use | limited use |
| b. Vocational Recommendations | one of 5 program areas are recommended | highly related to DOT | emphasis on orientation to training | related to specific jobs | limited to jobs related to work areas | limited use | not specified |
| c. Counselor Utilization | disability determination | orientated toward counselor | orientated toward counselor | orientated toward counselor | orientated toward counselor | not specified | not specified |
| 9. Training in System | | | | | | | |
| a. Training Required | Yes | Yes | No | Yes | Yes | No | No |
| b. Training Available | Yes | Yes | Yes | Yes | Yes | Yes | No |
| c. Duration | 1 to 2 weeks | 2 weeks | 2 weeks | 1½ days | 3 weeks | up to 10 days | no applicable |
| d. Follow up | No | Yes | No | not specified | No | as needed | No |

| Outline | McCarron-Dial | JEVS | Singer | TAP | TOWER | VALPAR | WREST |
|---|---|---|---|---|---|---|---|
| 10. Technical Considerations | | | | | | | |
| a. Norm Base | 200 clients | 322 clients | "more than 100 individuals" | 7 different norm groups | clients | clients and workers | different age groups and employed workers |
| b. Reliability | no data available | no data available | no data available | .85 coefficient of stability | no data available | test-retest with fairly high estimates | test-retest and internal consistency estimates given |
| c. Validity | procedures not adequate to draw conclusions | published results favorable | no data availalbe | no data available | equivocal results | no data available | no data available |

## DESCRIPTION OF THE MODULES

To help meet the need for individual assessment of vocational special needs students, a series of sixteen packets were developed, representing the seven service areas of vocational education. These packets are:

I. AGRICULTURE

*1) agriculture*
*2) horticulture*

II. TRADE & INDUSTRIAL OCCUPATIONS

*3) welding*
*4) sheet metal*
*5) graphic arts*
*6) woodworking*
*7) automotive*
*8) autobody*
*9) drafting*
*10) electricity*

III. HEALTH OCCUPATIONS

*11) health occupations*

IV. WORLD OF WORK

*12) world of work*

V. HOME ECONOMICS

*13) food preparation*
*14) child care*

VI. DISTRIBUTIVE EDUCATION

*15) distributive ed*

VII. BUSINESS AND OFFICE OCCUPATIONS

*16) business and office occupations*

The modules includes basic academic skill assessment, motor skill assessment, and interest assessment. Each module is designed as a separate package and teachers can choose to use all or part of each module. Although the materials were designed to be used when a student enters a program, they could be used at any time to re-assess or clarify individual student needs.

The assessment materials developed are informal in nature. They are based on common vocational and prevocational texts used in vocational classrooms. The modules can be used at the secondary and post secondary levels. (Each section of a module can be completed in one class period.) They have been field tested but are not normed or assessed for reliability or validity.

The following is an explanation of the materials that are contained in each module:

1. INTRODUCTION

This section is designed to give teachers a brief overview of the project, its purpose and its intended outcome. It also gives an explanation of the materials contained in the modules.

2. MATRICES SKILLS CHECK LISTS - Directions to the Teacher

This section explains to the teacher the use of the matrices. It is intended to be used as an observation instrument to assess four capability areas that are not easily quantifiable. These four areas are:

- daily living competencies
- personal characteristics
- work aptitudes
- motor skills

Since there are many contributing factors to poor or below average performance levels such as stress, nutrition, physical limitations, etc., the matrices were designed to be used as diagnostic tools to help establish goals and objectives reflective of each individual students' skill level.

3. MATRICES SKILLS CHECK LISTS

There are four separate check lists in each module: Personal Characteristics, Daily Living Competencies, Work Aptitudes and Motor Skills. Each list assesses a variety of factors. For example, included on the Personal Characteristics check list are skills such as:

grooming, personal hygiene, physical tolerance (full work day), peer relationships, self confidence, works well alone, works well in a group

Each matrices has a place for listing students names and for rating students from poor (1), to very good (5), or n/a (6). There is space on each matrices for teachers to add skills which they would like to assess in addition to those listed.

4. READING SKILLS - Directions to the Teacher

This section introduces the basic academic skill assessment area, Reading

Skills. It explains that the purpose of this area is to assess how well students understand written materials. Testing covers, vocabulary, main ideas, details or facts, and inference or logical deduction. The directions include specific instructions for scoring the student work sheets.

5. READING SKILLS - Paragraph 1

This section contains a paragraph for students to read. The information in the paragraph is unique for each module to reflect the specific vocational area of the module, e.g., the Sheet Metal module contains information in paragraph 1 taken from a sheet metal textbook. The Child Care module contains information in paragraph 1 taken from a child care textbook, etc. The reading level in paragraph 1 is relatively easy, geared for grades 4-8. The students read the paragraph and then fill out an accompanying work sheet.

6. STUDENT WORK SHEET - Paragraph 1

This sheet contains eight questions designed to assess how well the student understands the paragraph just read. Questions 1-5 on the work sheet cover vocabulary skills. Five vocabulary words from the paragraph are listed and students are asked to tell what the words mean as they are used in the paragraph. Question 6 asks the students to briefly tell what the paragraph is about to see if they can grasp the main idea of what they read. Question 7 is intended to assess the students ability to understand important facts or details in what they read. The last question, (question 8) looks for understanding that goes beyond what is in the paragraph. A question is asked which requires students to infer information from the paragraph. Students who have trouble with this paragraph may have difficulty learning through reading.

7. READING SKILLS - Paragraph 2

This section is the same as Paragraph 1 except it is longer and the reading

level is more difficult, grades 9-12. Again, the information in the paragraph is unique for each module to reflect information specifically relevant to the vocational area.

8. STUDENT WORK SHEET - for paragraph 2

   This sheet is the same as the Student Work Sheet for Paragraph 1. It contains eight questions covering the same reading skills as listed above.

9. LISTENING SKILLS - Directions to the Teacher

   This section begins the basic skills assessment area, Listening Skills. It is designed to indicate how well students use their auditory skills. Teachers are directed to tape or read a passage (which is provided) to the students twice. While they are listening, students have a work sheet to fill out regarding information in the passage being read to them. Directions are also given to the teacher for scoring this test.

10. LISTENING SKILLS - Paragraph to be Read or Taped

    This sheet contains the passage the teacher is to tape or read to the class. The information in the passage is unique to each module to reflect information relevant to each vocational area.

11. LISTENING SKILLS - Answers

    This sheet simply gives the teacher the answers to the student work sheet for listening skills.

12. LISTENING SKILLS - Directions to the Student

    This sheet instructs the student to listen carefully to the paragraph which is taped or read by the teacher and to fill in the information on the student work sheet for this section.

13. LISTENING SKILLS - Student Work Sheet

    This is a series of fill in the blank statements. Students are to fill in

the blanks as the paragraph is read to them.

14. PARTS OF A BOOK - Directions to the Teacher

This begins the section on the basic skill assessment of using a book to locate information. It is a simply designed test to indicate the student's information locating ability using a Table of Contents and an Index. Also included are instructions for scoring this section.

15. PARTS OF A BOOK - Answers

This sheet contains the answers for the teacher to the tests in this section.

16. PARTS OF A BOOK - Directions to the Student

This sheet explains to the students that there are two parts to the test. Using a Table of Contents and Using an Index. For each part there are 5 questions followed by a Table of Contents in the first part and an Index in the second part. Students are to find the answers to the questions from the Table of Contents and the Index provided.

17. PARTS OF A BOOK - Table of Contents Questions

This sheet contains the five questions students are to answer for this part.

18. TABLE OF CONTENTS

A Table of Contents for students to work from is in each module. The Table of Contents is unique to each module to reflect information relevant to each vocational area.

19. PARTS OF A BOOK - Index Questions

This sheet contains the five questions students are to answer for this part.

20. INDEX

An Index for students to work from is in each module. The Index is unique to each module to reflect information relevant to each vocational area.

21. MATH TEST - Directions to the Teacher

This begins the section on basic skill assessment in Mathematics. The test is designed to assess skill areas that might be needed in a vocational classroom. The skills cross vocational areas so the math test is the same in each module. There are 42 questions on the test, the first ten comprising a basic skill assessment and the remainder of the questions assessing various skills in diverse mathematical areas.

22. MATH TEST - Answers

This sheet contains the math test answers for the teacher.

23. MATHEMATICS - Directions to the Student

This sheet gives simple instructions for the student for taking the math test.

24. MATH TEST

This is a 42 - questions test; The first ten questions cover basic math skills and the remaining 32 questions assess skills in diverse mathematical areas. The test can be taken in one class period.

25. VOCATIONAL AWARENESS QUESTIONNAIRE

This begins the section on interest assessment. The sheet contains thirteen questions to be answered by students regarding job interest, job training, salary and job history.

26. CLASS SCORING SHEET - Directions to the Teacher

This sheet explains the recording of test scores for each student and offers suggestions for use of the results. Some of these suggestions include:

a) Locate areas of weakness that may need to be taught in the classroom

b) Group students for extra help

c) Refer students for help or support services

d) Prepare lessons and tests

e) Set individual and class goals

f) Place students in vocational programs

These scores should not be used as absolutes but as one source to provide a teacher some ideas of students strengths and weaknesses as related to their vocational program.

27. CLASS SCORING SHEET

This sheet has space for the students names and scores on all the assessment tests contained in each module.

The materials just listed above are contained in every module. The World of Work module has several distinctive features. This module was written specifically for students in disadvantaged and handicapped programs and contains the following additional materials:

-Following Directions-

This section includes teacher directions and student work sheets for assessment of student abilities in following directions.

-Safety Warnings Quiz-

This section includes teacher and student directions for a safety quiz. The quiz consists of 10 pictures depicting important safety warnings. Students are asked to match the pictures with statements describing the safety warnings.

The materials have been color coded for easy use. In every module the color coding is as follows:

| | | |
|---|---|---|
| White | - | Introdution and Vocational Awareness Questionnaire |
| Green | - | Teacher Materials |
| Yellow | - | Student Materials |
| Pink | - | Matrices |
| Gold | - | Class Scoring Sheets |

The modules were designed to be simple and flexible to increase usability, and to help teachers meet the assessment needs of individual students.

## FIELD TESTING

The field testing for these modules occurred through a variety of processes and settings. In addition to meetings with an advisory committee, the field testing consisted of a four part approach: Initial Review, Reworking, Classroom Use, and Workshop Review.

The initial review took place during the construction phase of the instruments. Suggestions from educators in the areas of reading, mathematics and vocational assessment were solicited. This initial input was usually through verbal comments on concepts and examination of the material for face validity and applicability. These initial reviewers were from various backgrounds including:

- trainers for the Vocational Reading Power Project
- secondary remedial reading and special needs practitioners
- vocational educators
- secondary support services personnel

The Reworking phase was accomplished with the help of students in university special needs courses. These students reviewed the materials and offered suggestions for the reworking of the material. Their comments dealt with vague or unclear items or directions and the perceived usefulness of the materials. As a result of the actual administration of the tests, level of difficulty and approximate time parameters were estimated.

The reviewers in this part consisted of:

- pre-service teachers in training
- practicing teachers
- teachers working towards recredentialing
- various students from vocational areas and from special education

The third field testing approach was through actual classroom use of the modules. In addition to the university classes previously mentioned, classes at Greeley West High School and at AIMS Community College participated in the

field testing. Some of the vocational areas which participated in the field testing of the materials were:

COOP-G (Disadvantaged Program)
Child Care
Horticulture
Food Preparation

Teachers recorded their reactions to the materials on Teacher's Comment Sheets.

Workshop Review was the final field testing phase. At workshops in Colorado Springs and Northglenn, Colorado, in May and June, 1979, over one hundred teachers assisted in reviewing the instruments. The Northglenn workshop was part of an assessment course for university credit. The participants represented teachers and schools from all over the Denver area. These teachers spent several days going over the materials carefully.

The Colorado Springs workshop was less extensive but elicited some useful comments concerning the matrices skills check list and the format.

Use of the four phases of field testing was beneficial for meaningful, repeated revision of the materials.

The following is a summary of the field testing comments from teachers and students. All suggestions were incorporated unless otherwise indicated.

## COMMENTS FROM FIELD TESTING

### LISTENING SKILLS

Changes in DIRECTIONS TO STUDENTS

Change the last two sentences to read:

At any time as you listen fill in information in the blanks. You will complete the facts that are missing.

It was noted that the tapes would have been better if read by vocational teachers from each of those areas ... however, this was not practical nor would there have been any consistency in the quality of reading.

Changes in DIRECTIONS TO THE TEACHERS

Second paragraph should read:

Please read the directions on the student sheets to the class. There will also be directions on the tape. However, the students may write at any time during the two readings. Have them look over the test sheet before listening to the tape to have a sense of what the tape will be about.

To the GRADING section of these directions add the following:

Only the word on your answer sheet or an abbreviation for it is acceptable for an answer.

MATH SKILLS

Some problems were too complicated with too many steps for special needs students. The following recommendations were made to simplify these problems.

14) Leave out "50 week year" and change "yearly" to "weekly."

15) The information for the master electricians is deleted to make the problem measure only one skill at a time.

16) The two steps necessary to complete the problem are separated with an a. and b. answer to show each part of the problem.

17) The word average is underlined to make it more visible.

18) The word below is added and the stipulation "in lowest terms" deleted as confusing.

24) The word starts is changed to "completes".

25 and 27) These numbers are to be deleted as not representative of current practice.

READING SKILLS

In Business and Office Occupations:

6) Question needs to be added.

Food Preparation

On one paragraph numbers 6,7, and 8 need to be added.

Welding

There is only one paragraph in the Reading Skills section.

Graphic Arts

Student Answer Sheet needs to be added for Listening Skills.

Table of Contents

Was judged to be a fairly simple exercise. In the World of Work, the questions for the Table of Contents need to be included.

Safety

In this area there were many comments. Overall the commentors liked the idea but wanted more areas included and several changes in the pictures used. The one comment heard most often was to get rid of the X's. These were found to be confusing.

It was thought that every improper act should be surrounded by the skull and crossbones mask and not just the one that signifies poison.

In the student directions, the following sentence should be deleted:

An X over the picture means "Don't do it."

Parts of the pictures were recommended deleted or changed. i.e., for the picture showing warning #1 - Get rid of the aerosal can. (confusing)

4 - Put the letter on the lighter part so that it can be seen.

7 - Make the nose more prominent.

## DISSEMINATION AND AVAILABILITY

The modules were disseminated through inservice workshops held in June and August of 1979 and through the mailing of a sample module to all vocational directors and special education directors at vocational-technical centers throughout Colorado. In addition, flyers announcing the materials and their availability were disseminated at appropriate conferences and meetings around the State.

The materials and the final report are available on a cost recovery basis from:

Vocational Teacher Education
University of Northern Colorado
Greeley, Colorado 80639

303/351-2939

The cost of the materials are as follows:

| MODULES | COST |
|---|---|
| Welding | $2.75 |
| Agriculture | $2.75 |
| Graphic Arts | $2.75 |
| Woodworking | $2.75 |
| Automotive | $2.75 |
| Auto Body | $2.75 |
| Drafting | $2.75 |
| Sheet Metal | $2.75 |
| Health Occupations | $2.75 |
| World of Work | $2.75 |
| Food Preparation | $2.75 |
| Child Care | $2.75 |
| Distributive Education | $2.75 |
| Electricity | $2.75 |
| Horticulture | $2.75 |
| Business & Office Occupations | $2.75 |
| Final Report | $2.00 |

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# APPENDIX A

## EXAMPLES OF TESTS

### Achievement Tests

| | |
|---|---|
| Adult Basic Learning Examination | Harcourt, Brace & Jovanovich Inc. |
| Davis Reading Test | Psychological Corporation |
| Gray Oral Reading Test | The Bobbs Merrill Company |
| Nelson-Denny Reading Test | Houghton - Mifflin |
| Peabody Individual Achievement Test | American Guidance Service |
| Gates - Mac Ginitie Reading Test (Survey E & F) | Teacher College Press |
| Wide Range Achievement Test | Guidance Associates |
| Stanford Diagnostic Reading Test | Harcourt, Brace & Jovanovich Inc. |
| Key Math Test | American Guidance Service |
| Prescriptive Reading Inventory | McGraw Hill |
| SRA Pictorial Reasoning Test | Science Research Associates |
| Stanford Diagnostic Mathematics Test | Harcourt, Brace & Jovanovich Inc. |
| Otis Quick - Scoring Mental Ability Test | World Book Company |
| Basic Skill Assessment | Educational Testing Service |
| California Test of Mental Maturity | McGraw Hill |

### Interest Tests

| | |
|---|---|
| Kuder Occupational Interest Survey | Science Research Associates |
| Minnesota Inportance Questionnaire | Vocational Psychology Research |
| Minnesota Vocational Interest Inventory | Psychological Corporation |
| Ohio Vocational Interest Survey | Harcourt, Brace & Jovanovich Inc. |
| Picture Interest Inventory | California Test Bureau |
| Strong Campbell Vocational Interest Blank | Stanford University Press |
| Career Assessment Inventory | National Computer Systems |
| Self Directed Search | Consulting Psychologists Press |
| What I Like To Do | Science Research Associates |
| Work Value Inventory | Houghton - Mifflin |
| Wide Range Interest & Opinion Test | Guidance Associates |
| Social & Prevocational Information Battery | McGraw Hill |
| Reading Free Vocational Interest Inventory | American Association of Mental Deficiency |

### Aptitude Tests

Multi-Aptitude Batteries

| | |
|---|---|
| Differential Aptitude Test | Psychological Corporation |
| General Aptitude Test Battery | U.S. Department of Labor |
| Nonreading Aptitude Test Battery | U.S. Department of Labor |

Vocational-Aptitude

| | |
|---|---|
| Minnesota Clerical Test | Psychological Corporation |
| SRA Clerical Aptitudes | Science Research Associates |
| SRA Typing Skills | Science Research Associates |
| Bennett Stenographic Aptitude Test | Psychological Corporation |
| The Daily Vocational Test | |
| Technical & Scolastic Test | Houghton - Mifflin |
| Spatial Visualization Test | Houghton - Mifflin |
| Business English Test | Houghton - Mifflin |

Motor Skills (dexterity)

| | |
|---|---|
| Crawford Small Parts Dexterity Test | Psychological Corporation |
| Hand-Tool Dexterity Test | Psychological Corporation |
| Purdue Pegboard | Science Research Associates |
| Stromberg Dexterity Test | Psychological Corporation |
| Bennett Mechanical Comprehension Test | Psychological Corporation |
| O'Rourke Mechanical Aptitude Test | O'Rourke Publications |
| Revised Minnesota Paper Form Board Test | Psychological Corporation |